



California Farmland Conversion Report 1998 - 2000



State of California

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Land Use Conversion, 1998-2000

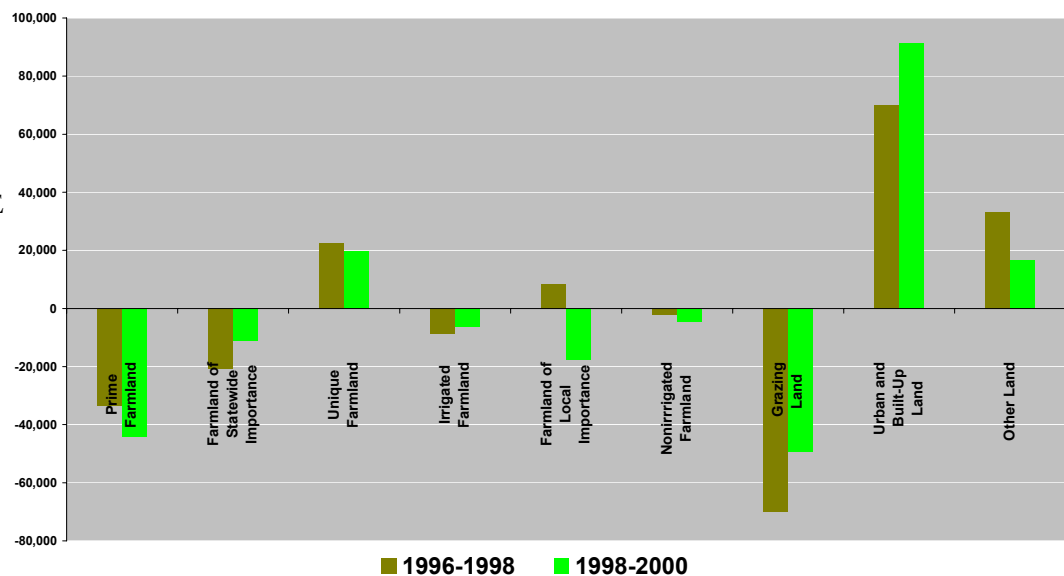
*Statewide urbanization increases by 30% over previous reporting period.
Farmland losses partially offset by vineyard planting in some locations.*

Land use conversion between 1998 and 2000 reflected the strong economy and specific agricultural trends of the late 1990's. Statewide urbanization as mapped by FMMP exceeded 90,000 acres for the first time since 1990-1992, when recession began to impact the pace of development. Prime Farmland accounted for 19% of the 91,258 new urban acres, and other irrigated farmland categories comprised an additional 8% of new urban land.

In addition to urbanization, a number of other factors affect the extent and quality of agricultural land in California, including land idling, conversion to ecological restoration uses, and low-density rural development. Between 1998 and 2000, agricultural losses were offset, in part, by large-scale vineyard development in many coastal counties. The net effect of these influences is seen in Figure 6, below.



Information in this chapter is based on tables in Appendix C unless otherwise stated. Appendix C information summarizes Important Farmland and Interim data, while the Important Farmland Conversion Summary (Table 3, page 13) excludes Interim data. Individual county conversion information is located in Appendix A.

FIGURE 6
STATEWIDE
ACREAGE
CHANGE



Urbanization

Southern California has long led the state in urban land development. In 1998-2000, Riverside County again had the largest number of acres converted to urban, followed by San Diego County (Table 2). Most of the urban growth was comprised of residential and commercial uses, as well as extensive golf course developments. In eastern Riverside County, fifteen new or expanded golf course communities were added in the Coachella Valley. Additional urbanization examples included landfill expansions and recreational facilities such as Legoland in San Diego.

CONVERSIONS	
	One square mile equals 640 acres.
	Riverside & San Diego counties accounted for over 40 square miles of new urban land between 1998 & 2000.

Much of the urbanized land in the top two counties did not derive from irrigated agriculture (Figure 7), but from grazing land and native vegetation. Irrigated farmland was impacted in Riverside County primarily near the cities of Corona and Indio; and in coastal north San Diego County from Del Mar to Oceanside.

While the top urban growth counties continued to be in Southern California, Central Valley and San Francisco Bay Area counties assumed six of the top ten slots.

TABLE 2
TOP OVERALL
URBAN RANKS

Urbanization from All Categories - Top 10 Counties (net acres)			
1996-1998		1998-2000	
Riverside	8,902	Riverside	14,080
Orange	7,740	San Diego	12,437
Kern	4,343	Sacramento	6,430
San Diego	4,322	Contra Costa	4,798
Fresno	4,016	Santa Clara	4,701
Los Angeles	3,873	Sonoma	4,626
Sacramento	3,812	Placer	3,840
Santa Clara	2,755	Fresno	3,693
Ventura	2,639	Orange	3,397
Placer	2,607	Los Angeles	2,979

This was the first FMMP conversion report where the central part of the state assumed such a prominent segment of the top-urbanizing list. Sacramento County's growth was located in three areas—Folsom, Elk Grove, and the Natomas area of the City of Sacramento. Most of Contra Costa County's development took place in the Brentwood area, while in Santa Clara County the Gilroy area had the greatest amount of urban conversion. In

Fresno County, growth occurred primarily around the Cities of Fresno and Clovis. With the exception of Folsom, these growing communities are all adjacent to high-quality irrigated farmland.

In the remaining counties—Sonoma, Placer, Orange, and Los Angeles—higher amounts of the urbanization took place on former grazing land, dryland grain areas, or native vegetation. The south Placer County communities of Roseville, Rocklin, and two Sun City developments share that county's growth, while in Sonoma County most new urban land surrounds Santa Rosa. In Los Angeles County, the Santa Clarita and Antelope Valleys absorbed much of the new development. Orange County still lost

TABLE 3
IMPORTANT FARMLAND CONVERSION SUMMARY (1)
1998-2000

DEPARTMENT OF CONSERVATION
Division of Land Resource Protection

Farmland Mapping and Monitoring Program

PART I

Land Use Totals and Net Changes

LAND USE CATEGORY	TOTAL ACREAGE INVENTORIED		1998-00 ACREAGE CHANGES			NET ACREAGE CHANGED
	1998	2000	ACRES LOST (-)	ACRES GAINED (+)	TOTAL ACREAGE CHANGED	
Prime Farmland	4,828,516	4,784,390	102,923	58,797	161,720	-44,126
Farmland of Statewide Importance	2,394,150	2,383,024	53,907	42,781	96,688	-11,126
Unique Farmland	1,204,640	1,224,328	57,965	77,653	135,618	19,688
Farmland of Local Importance	3,054,213	3,036,514	111,805	94,106	205,917	-17,699
IMPORTANT FARMLAND SUBTOTAL	11,481,519	11,428,256	326,600	273,337	599,937	-53,263
Grazing Land	13,605,261	13,553,757	110,730	59,226	169,956	-51,504
AGRICULTURAL LAND SUBTOTAL	25,086,780	24,982,013	437,330	332,563	769,893	-104,767
Urban and Built-Up Land	3,018,968	3,109,133	35,700	125,865	161,565	90,165
Other Land	11,803,663	11,812,562	100,076	108,975	209,051	8,899
Water Area	669,206	674,909	556	6,259	6,815	5,703
TOTAL AREA INVENTORIED	40,578,617	40,578,617	573,662	573,662	1,147,324	0

PART II

Land Committed to Nonagricultural Use

LAND USE CATEGORY	TOTAL ACREAGE 2000
Prime Farmland	26,429
Farmland of Statewide Importance	6,391
Unique Farmland	4,714
Farmland of Local Importance	35,790
IMPORTANT FARMLAND SUBTOTAL	73,324
Grazing Land	67,667
AGRICULTURAL LAND SUBTOTAL	140,991
Urban and Built-Up Land	0
Other Land	46,856
Water Area	0
TOTAL ACREAGE REPORTED	187,847

PART III Land Use Conversion from 1998 to 2000 (2)

LAND USE CATEGORY	Prime Farmland	Farmland of Statewide Importance	Unique Farmland	Farmland of Local Importance	Subtotal Important Farmland	Grazing Land	Total Agricultural Land	Urban and Built-Up Land	Other Land	Water Area	Total Converted To Another Use
Prime Farmland	to: --	4,704	2,682	35,767	43,153	19,681	62,834	19,392	18,622	2,075	102,923
Farmland of Statewide Importance	to: 1,800	--	2,449	26,857	31,106	6,769	37,875	5,200	10,024	808	53,907
Unique Farmland	to: 3,858	2,663	--	16,640	23,161	12,685	35,846	3,336	18,762	21	57,965
Farmland of Local Importance	to: 20,000	13,004	31,977	--	64,981	11,482	76,463	17,954	16,193	1,195	111,805
IMPORTANT FARMLAND SUBTOTAL	25,658	20,371	37,108	79,264	162,401	50,617	213,018	45,882	63,601	4,099	326,600
Grazing Land	to: 15,636	15,804	26,586	5,898	63,924	--	63,924	23,645	21,622	1,539	110,730
AGRICULTURAL LAND SUBTOTAL	41,294	36,175	63,694	85,162	226,325	50,617	276,942	69,527	85,223	5,638	437,330
Urban and Built-Up Land	to: 2,214	825	683	2,957	6,679	5,513	12,192	--	23,491	17	35,700
Other Land	to: 15,230	5,773	13,276	5,961	40,240	2,977	43,217	56,255	--	604	100,076
Water Area	to: 59	8	0	26	93	119	212	83	261	--	556
TOTAL ACREAGE CONVERTED	to: 58,797	42,781	77,653	94,106	273,337	59,226	332,563	125,865	108,975	6,259	573,662

(1) This table includes acreage data for all or part of 47 counties. Conversion data for Interim Farmland areas (Butte and portions of Kern County, totalling 3.6 million acres) are not included. Table does not include Western Stanislaus County, which was added to the survey area in 2000.

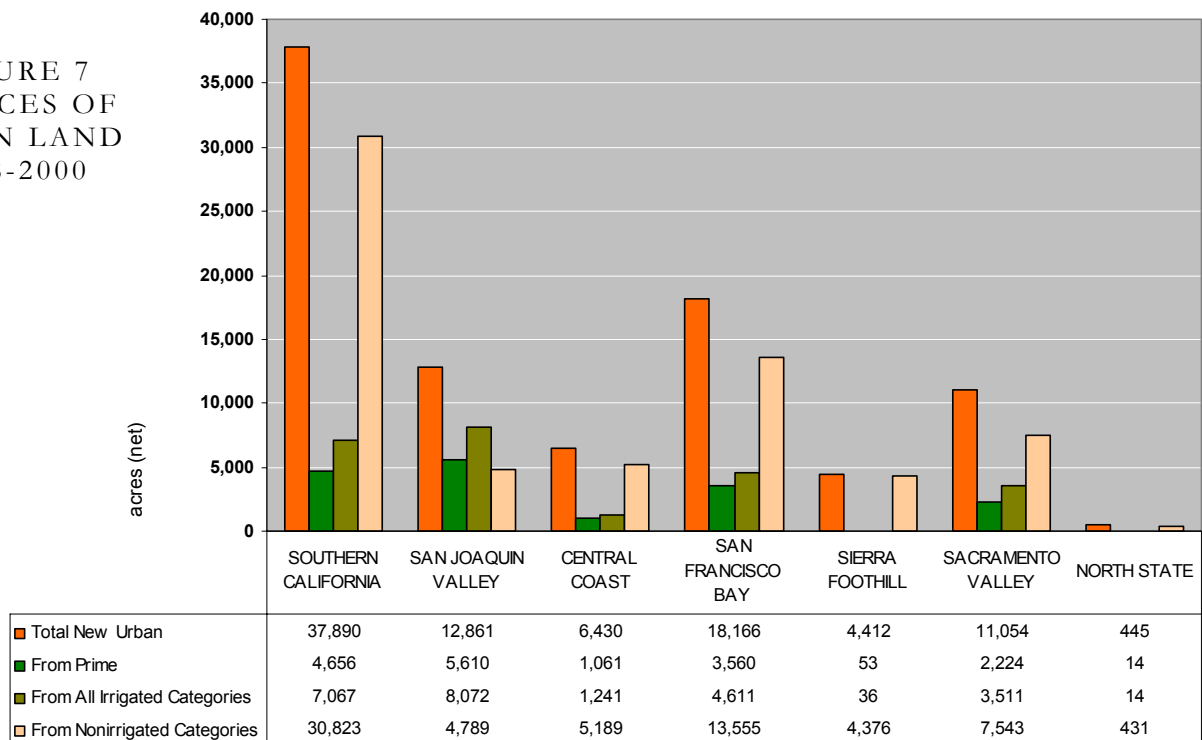
(2) Digital aerial photography and satellite data were used to improve land use mapping accuracy in 18 counties during the 2000 update. The adjustment of linework in these counties resulted in gross conversion figures (Part III) that are larger or more unusual than would be expected. Net figures (Part I) balance out the adjustments and are a more accurate reflection of overall change.

IMPORTANT FARMLAND CONVERSION SUMMARY

significant irrigated farmland acreage (972 acres), primarily near Tustin. The sources of new urban land by county are completely enumerated in Appendix C-Table 1.

In all counties, residential and commercial uses are the primary new urban land types. Golf course communities have been developed or expanded in each county on the top ten list. Schools, parks, hospitals, sewage treatment plants, landfills, and transportation facilities round out the common additions to urban. Other interesting examples from the top ten included entertainment venues such as an expansion at Sears Point Raceway in Sonoma County and the Island Water Park in Fresno County. In Sonoma and Fresno Counties, there were also a few large agricultural processing facilities and wineries that qualify as urban due to their size and infrastructure.

FIGURE 7
SOURCES OF
URBAN LAND
1998-2000



Regional differences in urbanization are also visible in Figure 7. Both the absolute and relative impact of development on Prime Farmland is of note. While 44% (5,610 acres) of new urban land in the San Joaquin Valley occurred on Prime Farmland, Southern California lost nearly as much in absolute acreage (4,656), but it comprised only 12% of the overall new urban land in that region.

Urbanization of irrigated farmland is further described in Table 4, outlining the top counties in terms of urban development on irrigated farmland. It is notable that the rankings in Table 3 and Table 4 generally agree. However, some counties in Table 4

TABLE 4
TOP IRRIGATED
TO URBAN
RANKS

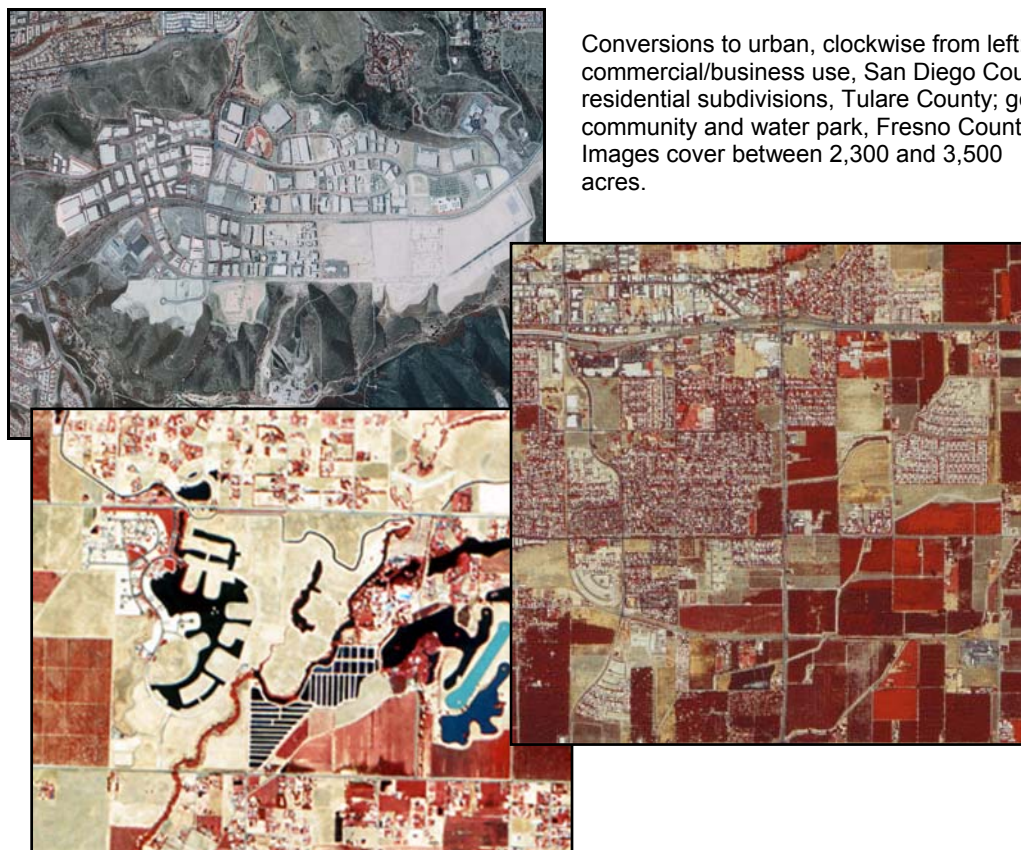
Irrigated Farmland to Urban - Top 10 Counties (net acres)			
1996-1998		1998-2000	
Riverside	2,335	Riverside	2,502
Fresno	2,269	Fresno	2,151
Orange	1,951	San Joaquin	2,037
San Joaquin	1,402	Santa Clara	1,904
Kern	1,386	Sacramento	1,863
Tulare	1,383	San Diego	1,437
Stanislaus	1,195	Contra Costa	1,329
Kings	1,075	Orange	972
Monterey	1,049	San Bernardino	940
Santa Clara	910	Merced	874

lost proportionally higher farmland acreage to urban uses. In San Joaquin County 2,037 acres out of 2,555 total new urban acres occurred on irrigated farmland (80%), while in Merced County the figure was 84% (874 out of 1,040 acres).

In summary, 19% of California's urbanization between 1998 and 2000 was from Prime Farmland, and an additional 8% was from other irrigated categories. San

Joaquin Valley, Southern California, and San Francisco Bay Area counties continue to have the greatest acreage conversions from irrigated land to urban.

FIGURE 8
URBAN
AIR PHOTO
EXAMPLES



Other Changes Affecting Agriculture

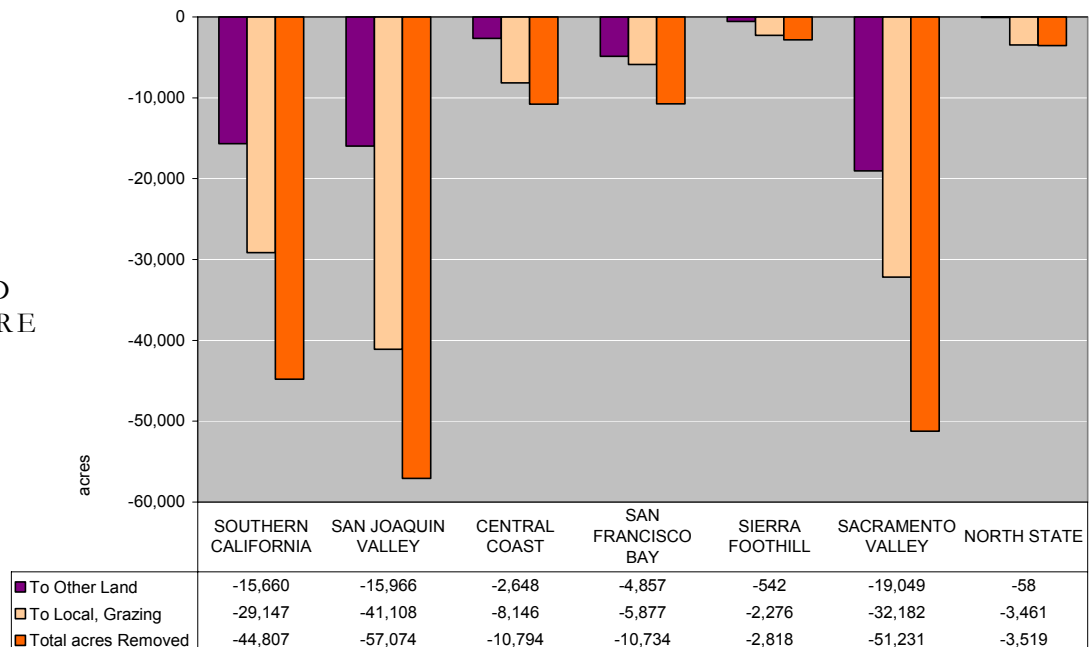
Urbanization is one of many factors affecting California's farmland resources. Changes in technology, agricultural markets and economics, water availability, and disease-causing organisms or pests are also major influences. These influences result in changes categorized here as bringing land into irrigated use or as removing land from irrigated use. These changes are enumerated in Appendix C-Table 2.

Please note that changes of this type have less permanency than does urban conversion. Land may move in either direction over time, although FMMP does employ mapping techniques to minimize the effect of annual fluctuations or crop rotation cycles, as described below.

Land is removed from irrigated agriculture when it has not shown evidence of irrigated use for three update cycles (approximately six years). This helps account for short-term fluctuations that are not truly changes in the amount of irrigated farmland. FMMP analysts attempt to confirm changes of this type via site visits when possible. In instances where supplemental information is available, such as documented ecological restoration projects, the three-update requirement is waived.

Between 1998 and 2000, three regions contained the bulk of the land removed from irrigated categories (Figure 9). Southern California, the San Joaquin Valley, and the Sacramento Valley each had reclassifications out of irrigated land exceeding 40,000

FIGURE 9
LAND
REMOVED
FROM
IRRIGATED
AGRICULTURE
1998-2000



acres. Conversions to Farmland of Local Importance or Grazing Land, typically due to land being left idle, are the largest component of these changes in all three regions.

The reasons that land is left idle vary with location. Anticipated urban development, unavailability of irrigation water, salinity or other soil issues, economic factors, conversion to habitat, or preparation for a different agricultural use appear to be the most common reasons.

Counties with more than 10,000 acres removed from irrigated categories (Appendix C-2) included Riverside, San Diego, and Kern. Urban conversion is likely in Riverside County's Perris and Moreno Valleys, and on San Diego County's Otay Mesa. Water cost or other potential uses have affected the Fallbrook/Bonsall area of San Diego County; while soil and water constraints are more prominent in Kern County. Large conversions to grazing land were made in Kern County near Tupman, Antelope Plain, Grapevine and Sawtooth Ridge.

An additional five counties each accounted for more than 5,000 acres of agricultural downgrades—all in the San Joaquin or Sacramento Valleys. With the exception of idled areas contiguous to cities in Sacramento County, most of the reclassifications from irrigated to nonirrigated classes were associated with soil and water constraints, or conversion to habitat. Additions to the San Luis National Wildlife Refuge in Merced County, and the idling of land on Sherman Island in Sacramento County are examples of wildlife facilities that may allow some seasonal grazing.

Conversions from irrigated agriculture to Other Land are less common than those to grazing or dryland farming categories. Low density residential use, wetland conversions, and confined animal agricultural facilities¹ are the most common reasons for conversion of agricultural land to Other Land. The Sacramento Valley was the leader in this category, with more than 19,000 acres converted.

FIGURE 10
ORCHARD
SUBDIVIDED
FOR
RESIDENCES



Notable counties with this type of change included San Diego, Kern, and Butte. Rural subdivision of agricultural land was a primary factor in San Diego County, especially near Bonsall, Temecula, and Rancho Santa Fe (Figure 10). Conversion of farmland to wetlands near the Sacramento River accounted for a large proportion of these changes in Butte County. In Kern County, a mixture of the primary factors, as well as some land idling

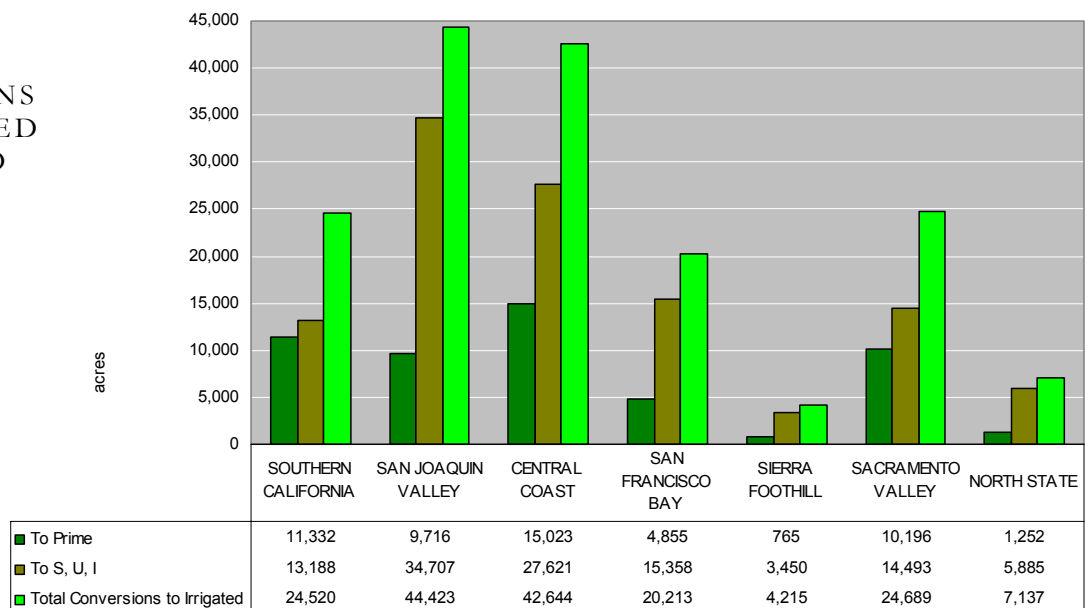
¹ In some counties, confined animal facilities (dairies, feedlots, poultry houses, aquaculture) are classified as Farmland of Local Importance (Local). Each county's Local definition is available in Appendix D.

on areas not suitable for grazing, accounted for the farmland to Other Land conversions.

Land is converted to irrigated agricultural use either when dry pastures or native vegetation are converted or when idled land is brought back into production. Market forces are a likely reason landowners make an investment in new- or upgraded- agricultural facilities. Between 1998 and 2000, five FMMP regions had conversions to irrigated farming categories in excess of 20,000 acres (Figure 11). The San Joaquin Valley and Central Coast were the leaders in this conversion type.

In the San Joaquin Valley, three reasons for the upgrades were common: orchard planting along the east side of the valley, where the slope to the Sierra Nevada begins; upgrades of pastures to annual irrigated crops; and the development of vineyards—particularly in San Joaquin County. Along the Central Coast, the agricultural improvements are predominantly in the form of new vineyards—although strawberries, ornamental crops and vegetable areas expanded somewhat in Santa Barbara County.

FIGURE 11
CONVERSIONS
TO IRRIGATED
FARMLAND
1998-2000



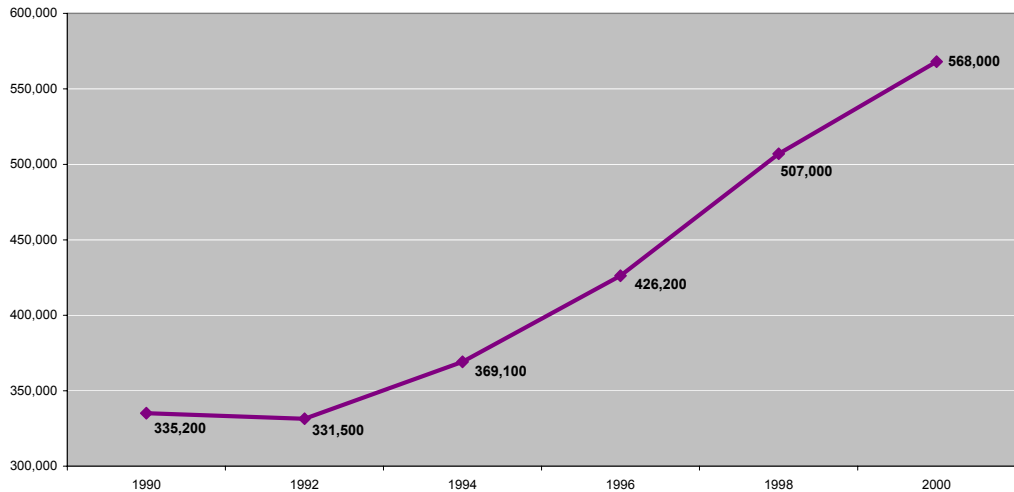
In Southern California, annual crops such as strawberries and flowers expanded given favorable market conditions. In the Antelope Valley of Los Angeles County, land that was planted to potatoes and baby carrots had been out of production for many years.

In every region, a majority of the land brought into irrigated uses is on lesser quality soils, not qualifying as Prime Farmland, as seen in Figure 11.

Vineyards expanded significantly in the coastal and San Joaquin delta counties.

This phenomenon, which FMMP first noted in San Joaquin County during the 1996 map update, became more widespread between 1996-1998, and affected all wine grape-growing areas in the current data. Figure 12 shows the increasing wine grape acreage as reported by the California Agricultural Statistics Service (CASS)².

**FIGURE 12
CALIFORNIA
WINE GRAPE
ACREAGE
1990-2000**



**TABLE 5
TOP RANKS -
INCREASES IN
IRRIGATED
LAND**

Net Increases of Irrigated Land (acres - Top 10 Counties)			
1996-1998		1998-2000	
Santa Barbara	7,719	Monterey (3)	14,611
Sierra Valley	6,454	San Luis Obispo	9,724
Sonoma	5,386	Sonoma	8,702
San Luis Obispo	5,285	Santa Barbara	6,204
Merced	3,933	Kings	4,455
Siskiyou	3,867	Los Angeles	4,215
Madera	3,739	Napa	3,534
Napa	1,773	Stanislaus	3,472
Tehama	1,639	Madera	2,271
Lake	742	Lake	2,119

Between 1996 and 2000, CASS data indicates that wine grapes comprised about 85% of the newly planted or 'nonbearing' grape acreage in the state. By 1998, wine grape acreage surpassed that of table and raisin grapes combined.

While the Central Valley has long been the leading area for table grapes and raisins, the new vineyards principally occur on hillsides in the coastal range and former pastures in Sacramento

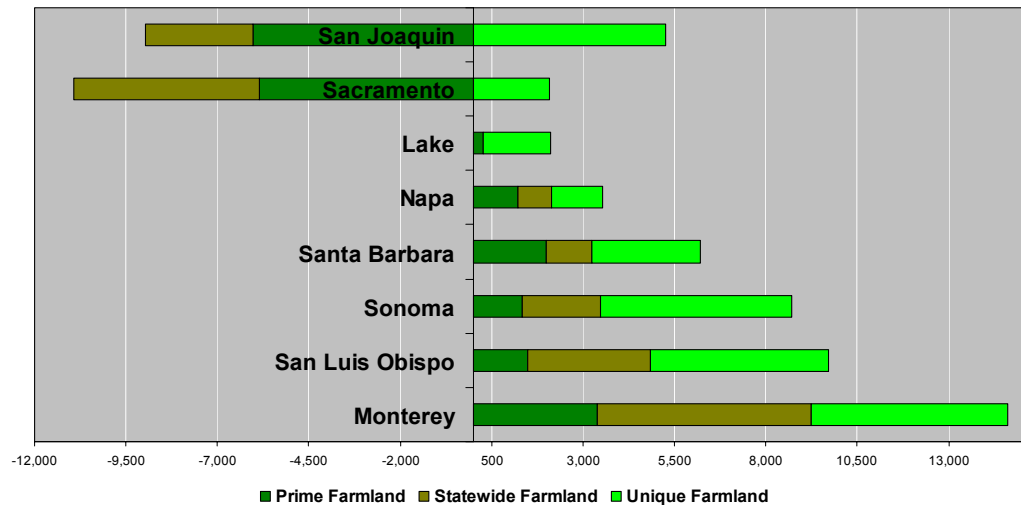
² Grape acreage data is available by county and statewide at www.nass.usda.gov/ca/bul/acreage.

³ Due to gaps in imagery coverage during prior updates, some proportion of the irrigated land increase in Monterey County reported for 1998-2000 may have occurred between 1996-1998.

and San Joaquin Counties. The list of counties showing net increases in agricultural acreage between 1998 and 2000 (Table 5) is dominated by coastal counties.

Development of vineyards on hillsides or other locations with soil limitations has the effect of increasing Unique Farmland acreage relative to Prime Farmland or Farmland of Statewide Importance in the counties experiencing this trend. Figure 13 charts net change in the three irrigated farmland categories for selected counties. The coastal counties had overall increases in irrigated acreage, as described above. Sacramento and San Joaquin counties had net losses in Prime Farmland and Farmland of Statewide Importance due to urbanization or land fallowing, while their Unique Farmland acreage increased, primarily as a result of new vineyards.

FIGURE 13
NET CHANGE
IN IRRIGATED
FARMLAND
FOR SELECT
COUNTIES
1998-2000



New vineyards and other changes in agriculture are mapped using color infrared imagery as seen in Figure 14. The variations in color and texture on the image are what FMMP analysts use to determine the type of crop and its health status (NASA photography).

FIGURE 14
VINEYARD
DEVELOPMENT
AIR PHOTO
EXAMPLE

This photo shows the Los Alamos Valley area of Santa Barbara County. Younger vineyards in the upper half of the photo appear pale relative to the central, dark red portion, which was planted prior to 1990. The bright red and blue fields on the bottom of the image are other crops and bare soil.



Net Land Use Change

Just over 90,000 acres, about 143 square miles, became urbanized in the FMMP survey area from 1998 to 2000. Nineteen percent of this land had been Prime Farmland, while an additional 8% came from other irrigated categories. Urbanization and other factors contributed to a net loss of more than 44,000 acres of Prime Farmland during the 2000 map update.

California is experiencing a trend in which higher-quality farmlands are urbanized or lost to other uses while properties with site limitations are converted to farming uses. Figure 6, at the beginning of this chapter, is a statewide depiction of this process covering the 1996-1998 and 1998-2000 time periods.

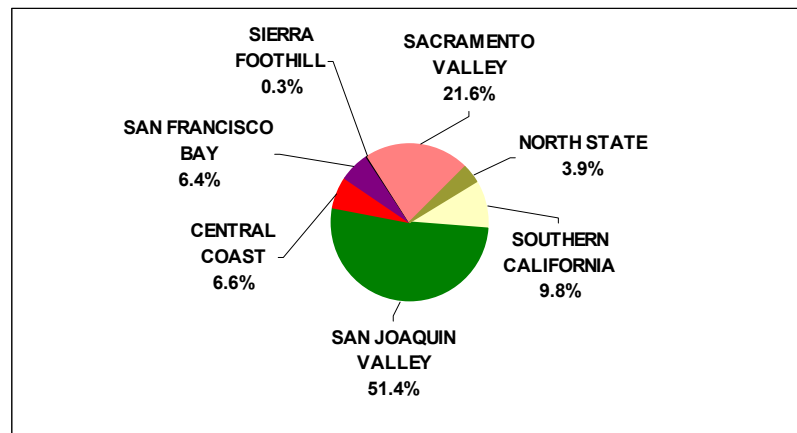
Over the last two FMMP updates (1996-2000), Prime Farmland acreage declined by more than 77,000 acres, and urban land increased by more than 161,000 acres. The net irrigated farmland loss, at 82,512 acres, was only slightly higher than the Prime Farmland loss, as gains in Unique Farmland (42,000 acres) worked to offset declines in all other irrigated categories (47,000 acres). Agricultural development on poorer soils primarily took the form of vineyards, and to a lesser degree consisted of orchards, ornamental or annual crops.

Whether this trend continues is a question that will depend on landowners and decision makers over the coming years. FMMP will continue to map the evolving

pattern of land use change affecting the state's open space and agricultural resources.

As Figure 15 indicates, California's Prime Farmland is distributed

FIGURE 15
DISTRIBUTION
OF PRIME
FARMLAND
2000



among all regions of the state. Most urban areas in the state are still contiguous to Prime Farmland, thus expected population growth and development patterns will continue to impact the highest-quality farmland in irreversible fashion.